

CLAIMS:

1. A method for venting trapped fluid out of a hollow cylindrical body while the hollow cylindrical body is being filled with a material, the method comprising:
- 5 providing a hollow cylindrical body comprising a first opening and a second opening;
- providing a seal comprising a vent and a plunger tip pocket;
- providing a plunger tip comprising at least one vent channel;
- 10 inserting the seal into the hollow cylindrical body, wherein a volume is defined within the hollow cylindrical body between the seal and the second opening of the hollow cylindrical body, and further wherein the volume contains a fluid;
- filling the hollow cylindrical body with the material through the second opening of the hollow cylindrical body, wherein the fluid within the volume is vented through the vent of the seal as the material occupies the volume;
- 15 inserting the plunger tip into the hollow cylindrical body via the first opening of the hollow cylindrical body; and
- seating the plunger tip in the plunger tip pocket of the seal, wherein the plunger tip occludes the vent when the plunger tip is seated in the plunger tip pocket, and further wherein fluid within the plunger tip pocket escapes through the at least one vent channel in the plunger tip while the plunger tip is being seated in the plunger tip pocket.
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2. The method of claim 1, wherein the plunger tip locks into the plunger tip pocket of the seal when the plunger tip is seated in the plunger tip pocket.
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3. The method of claim 2, further comprising retracting the plunger tip and the seal, whereby negative pressure is created in the volume.
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4. The method of claim 1, wherein the seal further comprises a concave surface adjacent the volume.

5. The method of claim 4, wherein the vent is located proximate a center of the concave surface of the seal.

6. The method of claim 1, wherein the seal further comprises at least one pair of retaining plug receptacles, and further wherein the plunger tip further comprises at least one pair of retaining plugs.

7. The method of claim 6, wherein seating the plunger tip in the plunger tip pocket of the seal further comprises inserting the at least one pair of retaining plugs of the plunger tip in the at least one pair of retaining plug receptacles of the seal.

8. A method for venting trapped fluid out of a hollow cylindrical body while the hollow cylindrical body is being filled with a material, the method comprising:

providing a hollow cylindrical body comprising a first opening and a second opening;

providing a seal comprising a vent and a plunger tip pocket;

providing a plunger tip comprising at least one vent channel;

filling the hollow cylindrical body with the material;

inserting the seal into the hollow cylindrical body, wherein a volume is defined within the hollow cylindrical body between the seal and the second opening of the hollow cylindrical body, wherein the volume contains a fluid, and further wherein the fluid within the volume is vented through the vent of the seal as the seal is inserted into the hollow cylindrical body;

inserting the plunger tip into the hollow cylindrical body through the first opening of the hollow cylindrical body; and

seating the plunger tip into the plunger tip pocket of the seal, wherein the plunger tip occludes the vent when the plunger tip is seated in the plunger tip pocket, and further wherein fluid within the plunger tip pocket escapes through the at least one vent channel in the plunger tip while the plunger tip is being seated in the plunger tip pocket.

9. The method of claim 8, wherein the plunger tip locks into the plunger tip pocket of the seal when the plunger tip is seated in the plunger tip pocket.

10. The method of claim 9, further comprising retracting the plunger tip and
5 the seal, whereby negative pressure is created in the volume.

11. The method of claim 8, wherein the seal further comprises a concave surface adjacent the volume.

10 12. The method of claim 11, wherein the vent is located proximate a center of the concave surface of the seal.

13. The method of claim 8, wherein the seal further comprises at least one pair of retaining plug receptacles, and further wherein the plunger tip further
15 comprises at least one pair of retaining plugs.

14. The method of claim 13, wherein seating the plunger tip in the plunger tip pocket of the seal further comprises inserting the at least one pair of retaining plugs of the plunger tip in the at least one pair of retaining plug
20 receptacles of the seal.

15. A self-venting movable seal and plunger assembly, the assembly comprising:

25 a hollow cylindrical body comprising a first opening and a second opening;

a movable seal comprising:

a plunger tip pocket,

30 a first end and a second end, wherein a volume is defined within the hollow cylindrical body between the second end of the seal and the second opening of the hollow cylindrical body when the movable seal is located within the hollow cylindrical body, and

a vent extending between the plunger tip pocket and the second end of the movable seal, wherein the plunger tip pocket is in fluid

communication with the volume when the movable seal is located within the hollow cylindrical body; and

a plunger tip comprising at least one vent channel, wherein the plunger tip is configured to seat within the plunger tip pocket of the movable seal,
5 wherein the plunger tip occludes the vent in the movable seal when the plunger tip is seated within the plunger tip pocket, and further wherein fluid within the plunger tip pocket escapes through the at least one vent channel in the plunger tip as the plunger tip is seated in the plunger tip pocket.

10 16. The assembly of claim 15, wherein the plunger tip is configured to lock into the plunger tip pocket of the seal.

17. The assembly of claim 15, wherein the seal further comprises at least one pair of retaining plug receptacles, and further wherein the plunger tip
15 further comprises at least one pair of retaining plugs configured to fit in the at least one pair of retaining plug receptacles of the seal.

18. The assembly of claim 15, wherein the second end of the seal comprises a concave surface.

20 19. The assembly of claim 18, wherein the vent is located proximate a center of the concave surface of the first end of the seal.

20. A self-venting movable seal and plunger assembly, the assembly
25 comprising:

a hollow cylindrical body comprising a first opening and a second opening;

a movable seal comprising:

a plunger tip pocket,

30 a first end and a second end, wherein a volume is defined within the hollow cylindrical body between the second end of the seal and the second opening of the hollow cylindrical body when the movable seal is located within the hollow cylindrical body,

a vent extending between the plunger tip pocket and the second end of the movable seal, wherein the plunger tip pocket is in fluid communication with the volume when the movable seal is located within the hollow cylindrical body, and

5 at least one pair of retaining plug receptacles; and
a plunger tip comprising:

 at least one vent channel, and

 at least one pair of retaining plugs, wherein the plunger tip is
configured to seat within the plunger tip pocket of the movable seal,
10 wherein the plunger tip occludes the vent in the movable seal when the
plunger tip is seated within the plunger tip pocket, wherein fluid within
the plunger tip pocket escapes through the at least one vent channel in
the plunger tip as the plunger tip is seated in the plunger tip pocket, and
further wherein the at least one pair of retaining plugs is configured to fit
15 in the at least one pair of retaining plug receptacles of the movable seal.

21. The assembly of claim 20, wherein the plunger tip is configured to lock
into the plunger tip pocket of the seal.

20 22. The assembly of claim 20, wherein the second end of the seal comprises
a concave surface.

23. The assembly of claim 22, wherein the vent is located proximate a
center of the concave surface of the first end of the seal.

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